

1 31. The method of claim 28, further comprising applying a peripheral
2 input to the patient that is expected to generate neural activity in the brain related to
3 performing the neural-function.

1 32. The method of claim 28, further comprising:
2 applying a peripheral input to the patient that is expected to generate
3 neural activity in the brain that performs the neural-function; and
4 identifying a stimulation site comprises taking a first image of the brain
5 that shows neural activity before applying the peripheral input, taking a second image
6 of the brain that shows neural activity while applying the peripheral input, and
7 comparing a change in neural activity in the brain between the first and second images.

1 33. The method of claim 28 wherein neural activity for the neural-
2 function is expected to occur at the first location in the brain according to a known
3 functional organization of the brain, and wherein identifying the stimulation site
4 comprises detecting neural activity for the neural-function at a second location in the
5 brain different than the first location.

1 34. The method of claim 33 wherein detecting the neural activity
2 comprises taking functional MRI images of the brain and monitoring neural activity at
3 the second location.

1 35. The method of claim 28 wherein the neural-function controls
2 learning a task and the neural activity related to the neural function is expected to
3 occur at the first location of the brain according to a known functional organization of
4 the brain, and wherein identifying the stimulation site comprises detecting a change in
5 the neural activity at the first location of the brain while the patient learns the task.

36. The method of claim 35 wherein detecting a change in the neural activity comprises taking functional MRI images of the brain while the patient learns the task.

37. The method of claim 28 wherein the neural-function controls learning a task and the neural activity related to the neural function is expected to occur at the first location of the brain according to a known functional organization of the brain, and wherein identifying the stimulation site comprises detecting a change in the neural activity at a second location different than the first location of the brain while the patient learns the task.

38. The method of clam 37 wherein detecting a change in the neural activity comprises taking functional MRI images of the brain while the patient learns the task.

39. The method of claim 28 wherein the first region of the brain is affected by a disease and neural activity related to the neural-function is expected to occur at the first location of the brain according to a known functional organization of the brain, and wherein identifying the stimulation site comprises detecting a change in neural activity adjacent to the first region.

40. The method of claim 28 wherein the first region of the brain is affected by a disease and neural activity related to the neural-function is expected to occur at the first location of the brain according to a known functional organization of the brain, and wherein identifying the stimulation site comprises detecting a change in neural activity related to the neural-function at a second location different than the first location.

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1 41. The method of claim 28 wherein the first region of the brain is
2 affected by brain damage and neural activity related to the neural-function is expected
3 to occur at the first location of the brain according to a known functional organization
4 of the brain, and wherein identifying the stimulation site comprises detecting a change
5 in neural activity adjacent to the first region.

1 42. The method of claim 28 wherein the first region of the brain is
2 affected by brain damage and neural activity related to the neural-function is expected
3 to occur at the first location of the brain according to a known functional organization
4 of the brain, and wherein identifying the stimulation site comprises detecting a change
5 in neural activity related to the neural-function at a second location different than the
6 first location.

1 43. A method of treating a loss of a neural-function at a first cortical
2 location of a brain of a patient, comprising:

3 selecting a stimulation site at a cortical region of the brain where neural
4 activity is expected to occur to compensate for the loss of neural-function at the first
5 cortical location of the brain;

6 positioning a first electrode at a first area of the stimulation site
7 proximate to the pia mater in the cortical region;

8 positioning a second electrode at a second area of the stimulation site
9 proximate to the pia mater in the cortical region; and

10 applying an electrical potential between the first and second electrodes.

1 44. The method of claim 43 wherein the neural-function is generally
2 carried out by neural activity at the first region of the brain according to a known
3 functional organization of the brain, and wherein selecting a stimulation site comprises
4 estimating a location of a second region of the brain where neural activity for